



# ***Secure, Cross Community Access to Real Time Full Motion Video: A Case Study***

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# Agenda

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- Overview
- Operational Requirements
- Solution Architecture
- Building the Solution
- Standards Adherence: Key Protocols
- Summary
- Contact Information

# Overview

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- Proliferation of real-time, full motion video (RTFMV) collections platforms
- Outstripped by consumer demand for RTFMV
- Result:
  - Multiple customers accessing single platform
- Requirement
  - Multi-tenanted access to the collection platform

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# OPERATIONAL REQUIREMENTS

# The 1992 Fantasy



# The 2013 Reality



# The Multi-Tenancy Issue

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- Consumers have different collections requirements
- Everyone needs the collection asset – but not concurrently
- Multi-tenancy concept solves the issue
  - Mechanism to share resources
  - Cost effectively
  - SECURELY – you don't see what the asset does for me



# Multi-Tenancy Use Case

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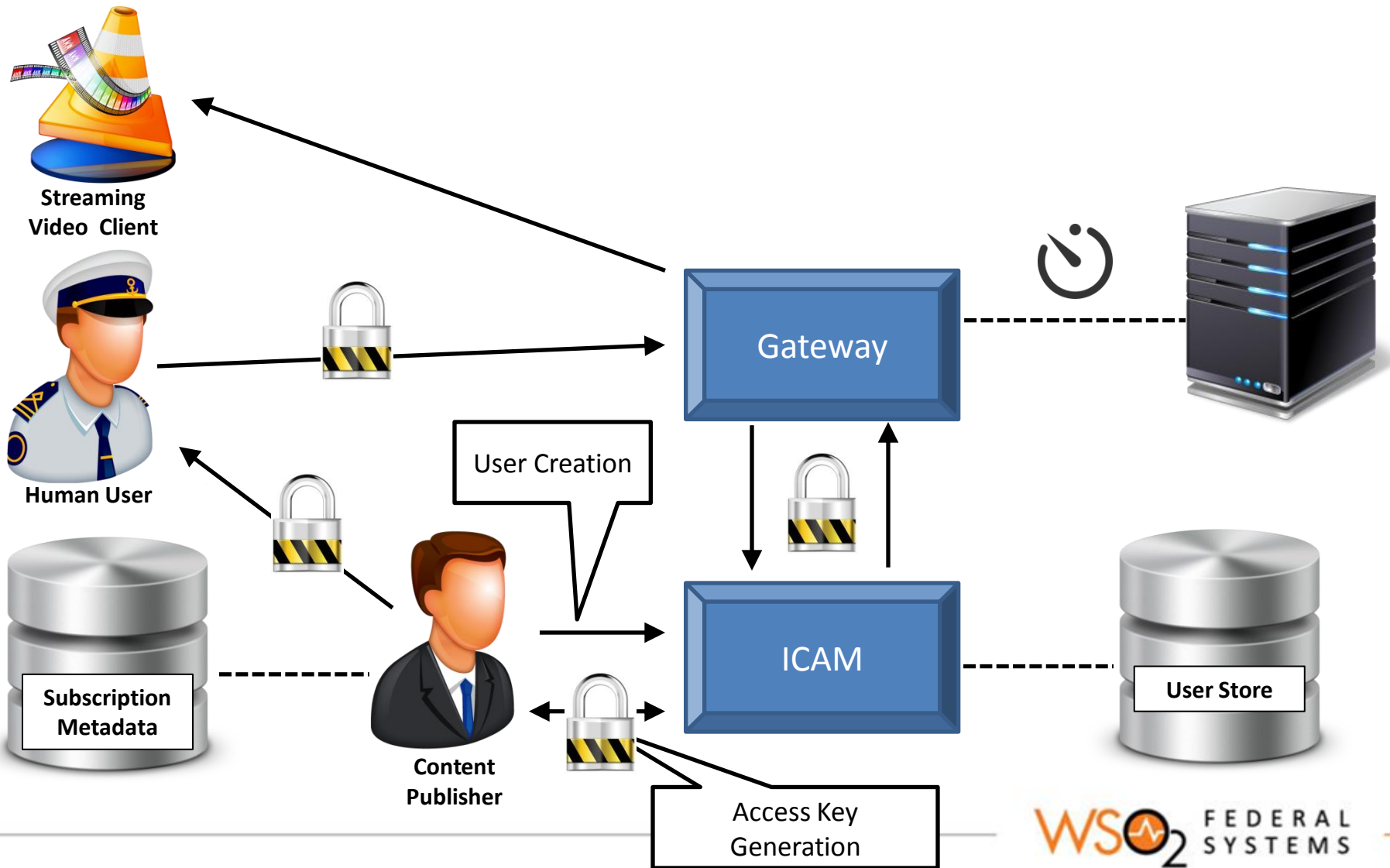
- Single asset
- Streaming RTFMV data
- Multiple consumer organizations
  - Time-share access to RTFMV
- Security restrictions:
  - Asset controllers cannot have knowledge of the consumer organizations
  - Consumer organizations cannot have knowledge of each other
  - Consumer organizations cannot have knowledge of data supplied to other organizations



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# SOLUTION ARCHITECTURE

# Architectural Overview

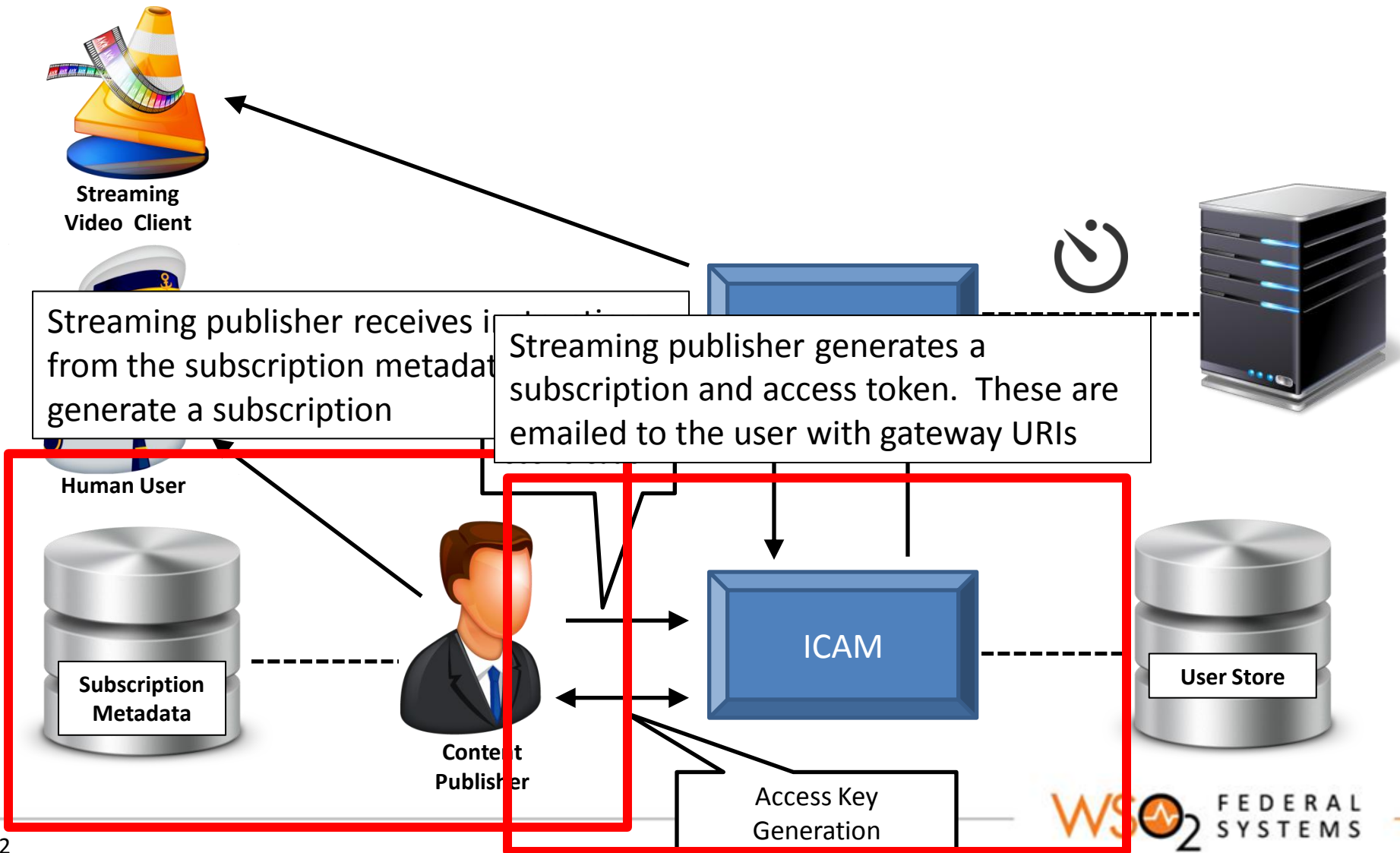


# Use Cases

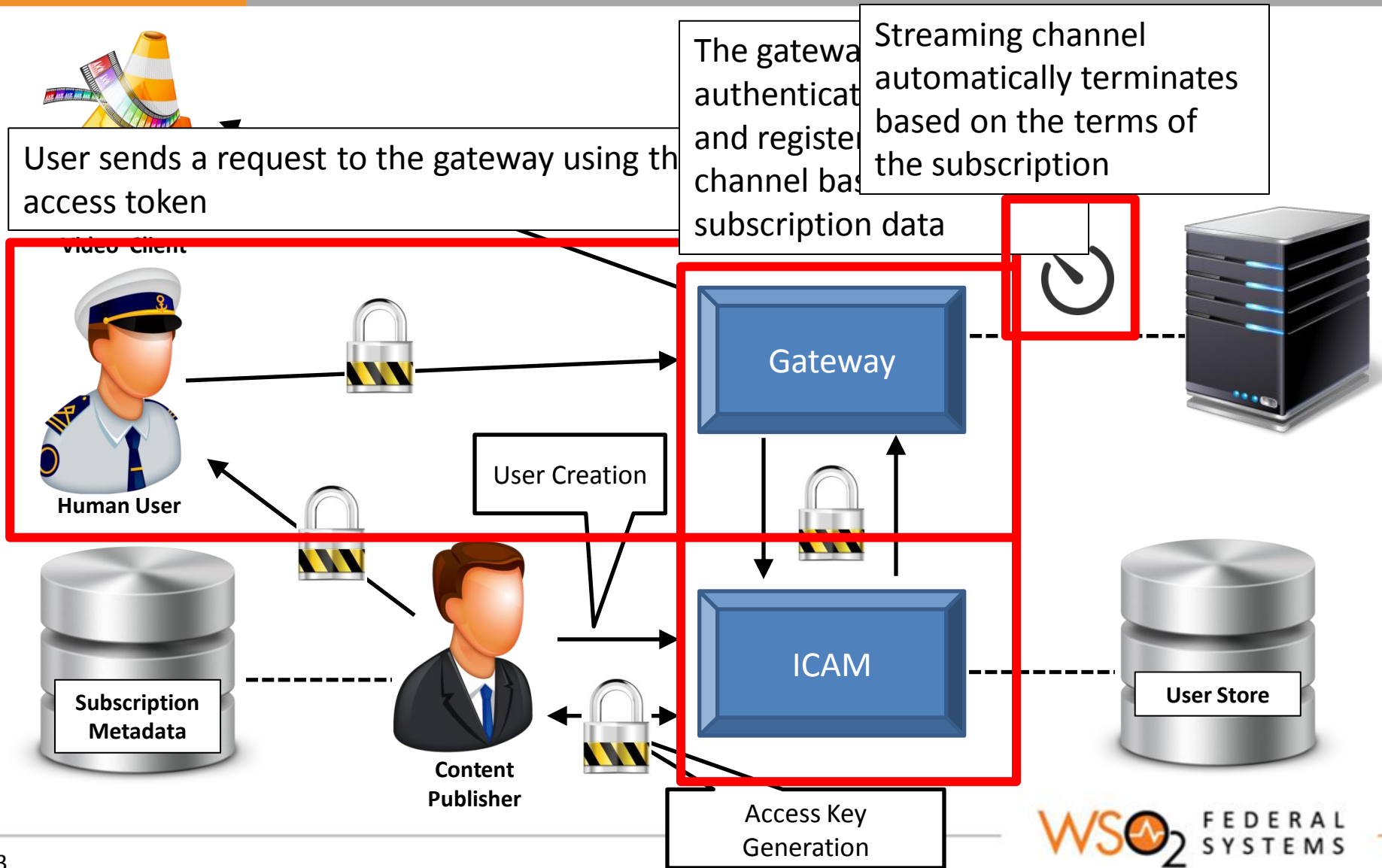
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- Subscription
- Content Delivery
- Housekeeping

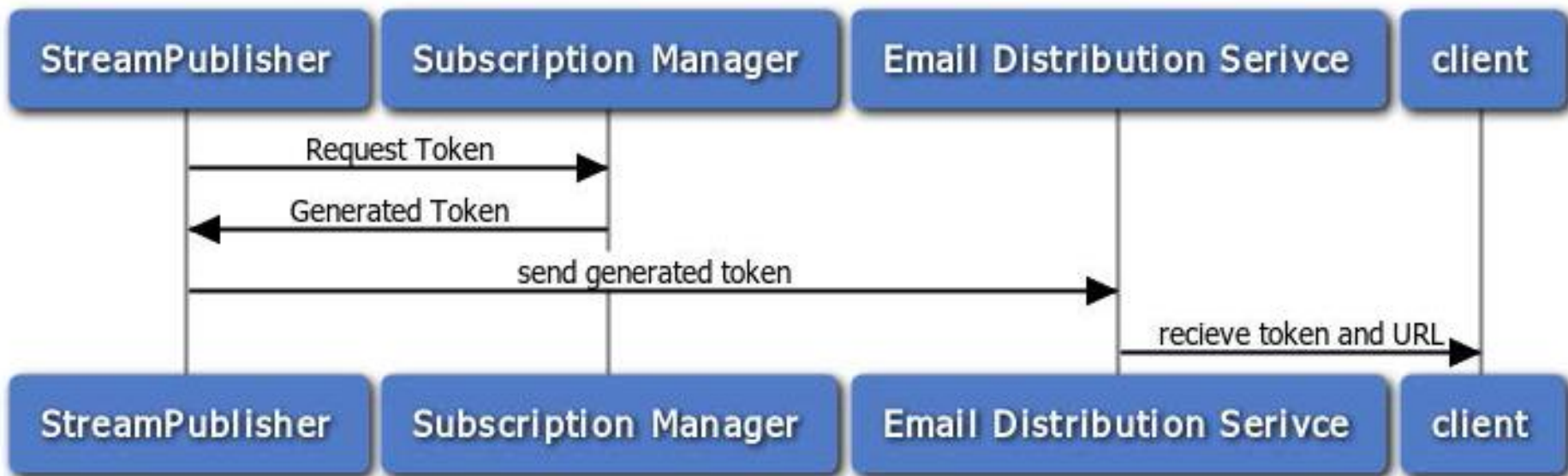
# Use Case 1: Subscription



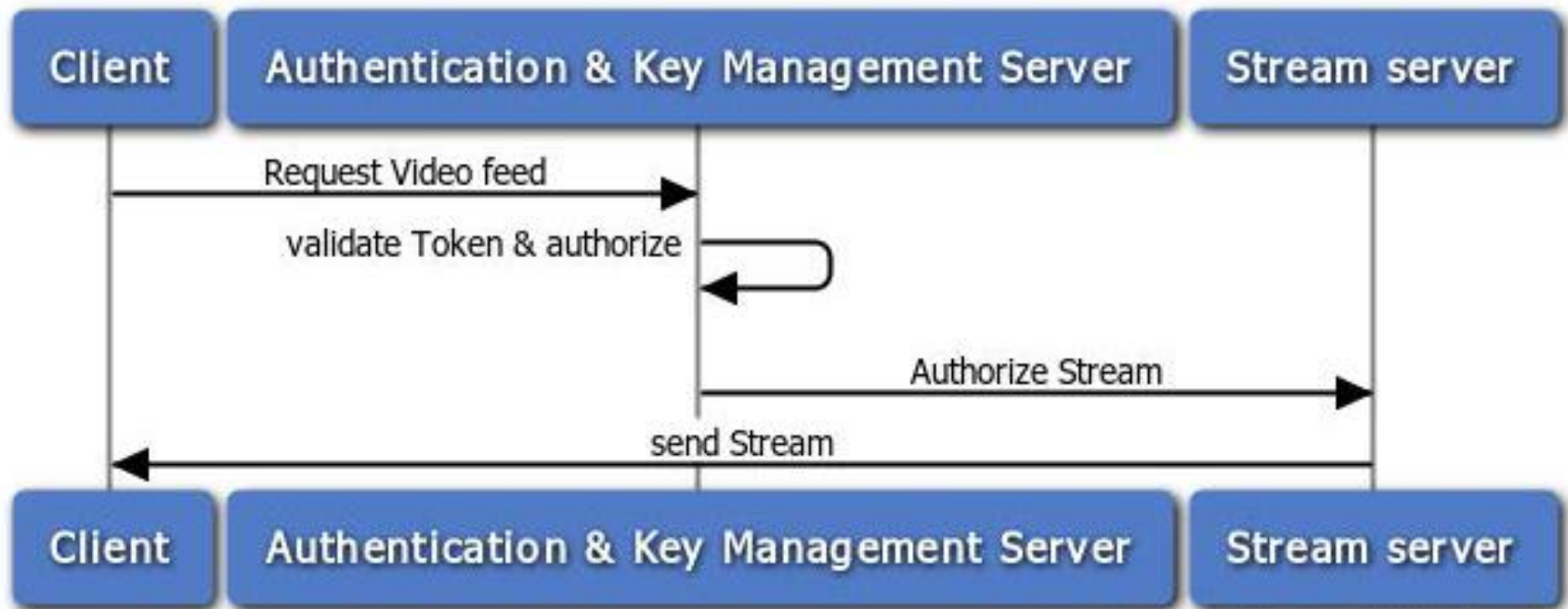
# Use Case 2: Content Delivery



# Token Generation Sequence



# Token Verification and Authorization Sequence





# Additional Content Delivery Notes

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- Client can establish N number of sessions
- Client can view in many formats
- Same video can subscribe by many clients

## Use Case 3: Housekeeping

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- Remove the subscription upon expiration
- Remove any subscription metadata created for the subscription
- Maintain an audit log; use client email as correlation ID

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# BUILDING THE SOLUTION

# Engineering Principles

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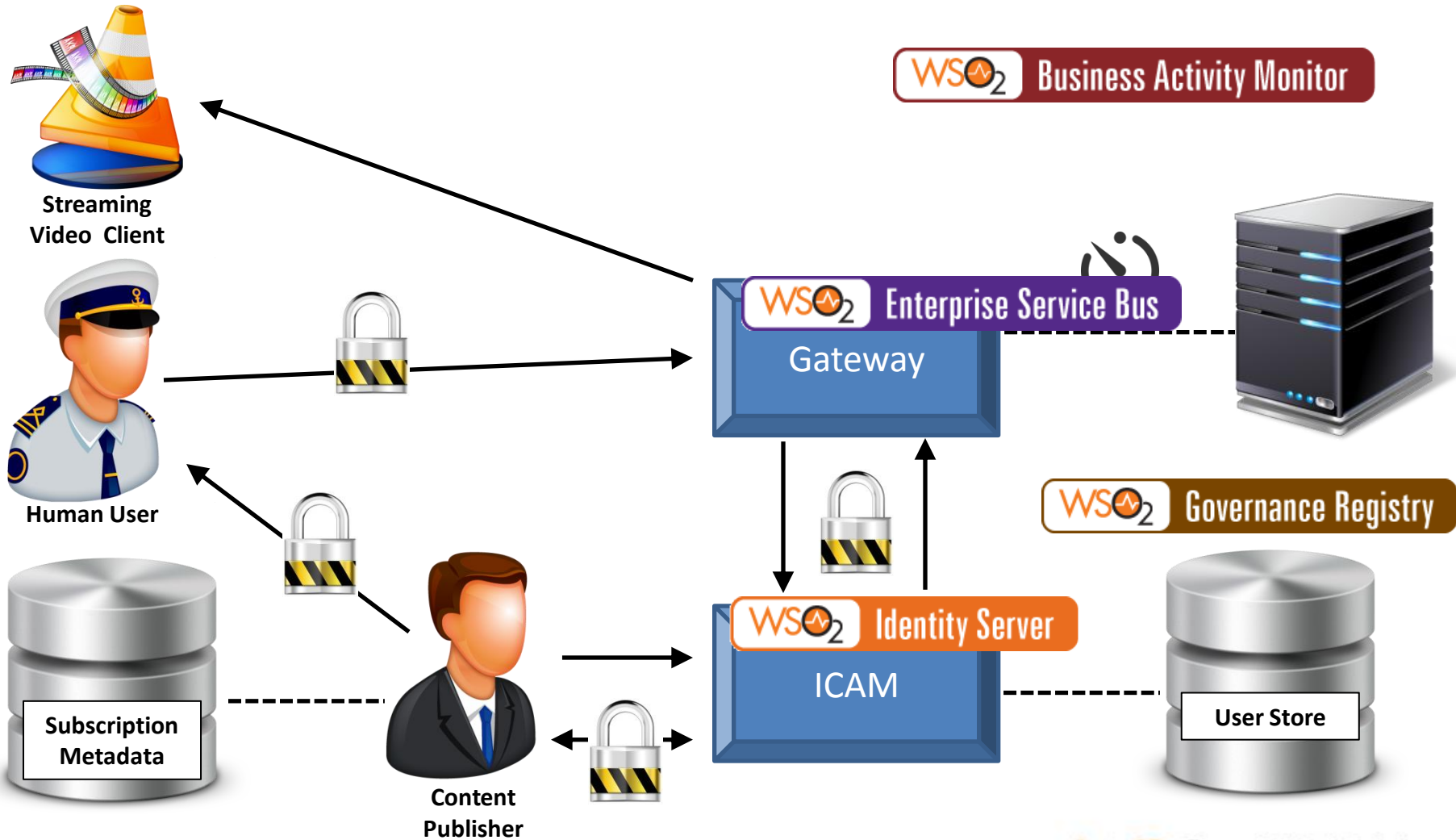
- Integration, not de novo generation
- Configuration, not coding
- Maximum use of open source software (OSS)
  - DoD OSS Memo – 16 OCT 2009
- Classified information, not infrastructure
- Commercial support

# Why WSO2 Federal?

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- Complete data to screen WSO2 SOA and Cloud platforms
- Componentized architectures
  - Use only what you need, grows with you, internally consistent, out of the box integration
- Improved program productivity
  - Emphasis on config vs. code, standard skill base
- Open Source
  - No copyleft licensing! Apache License 2.0
  - Lock-in protection
- Comprehensive support
  - SLA
  - Competitive price

# Component Overview



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# STANDARDS ADHERENCE: KEY PROTOCOLS



# Key Protocols

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- Session Initiation Protocol
- Session Description Protocol
- Real Time Transport Protocol
- Real Time Streaming Protocol
- Real Time Messaging Protocol
- H.264
- HLS

# Session Initiation Protocol (SIP)

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- Used to control multimedia communication sessions
- Defines the messages that are sent between peers
- Can be used for
  - Creating sessions
  - Modifying sessions
  - Terminating sessions
- Applications include:
  - Video conferencing, streaming multimedia distribution, instant messaging, presence information, file transfer, fax over IP and online games

# Session Description Protocol (SDP)

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- Describes multimedia communication sessions:
  - Session announcement
  - Session invitation
  - Parameter negotiation
- Does not deliver media; used for negotiation between end points of media type, format, and all associated properties
- Used in conjunction with Real-time Transport Protocol (RTP), Real-time Streaming Protocol (RTSP), Session Initiation Protocol (SIP)

# Real Time Transport Protocol (RTP)

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- Defines packet format for delivering audio and video over IP networks
- Used in communication and entertainment systems that involve streaming media

# Real Time Streaming Protocol (RTSP)

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- Network control protocol designed for use in entertainment and communications systems to control streaming media servers
- Used for establishing and controlling media sessions between end points
- Enables VCR-like commands, such as play and pause, to facilitate real-time control of playback of media files from the server

# H.264

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- Video compression format
- One of the most commonly used formats for the recording, compression, and distribution of video content
- Block-oriented
- Motion-compensation-based
- Developed by the ITU-T Video Coding Experts Group (VCEG) together with the ISO/IEC JTC1 Moving Picture Experts Group (MPEG)

# HTTP Live Streaming (HLS)

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- HTTP-based media streaming communications protocol
- Part of their QuickTime
- Breaks the overall stream into a sequence of small HTTP-based file downloads, each download loading one short chunk of an overall potentially unbounded transport stream
- Specifies a standard encryption mechanism using AES and HTTPS



# Summary

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- Operators will continue to drive demand for RTFMV
- There is a growing, but finite number of collection platforms
- Effective and efficient solutions must enable multi-tenanted access to collections platforms
- Programmatically achievable solutions will leverage open source software
- WSO2/WSO2 Federal provides the only complete OSS data to screen SOA platform

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# QUESTIONS?

# Contact

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